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Final Trip Report

PAGE Project
Valuation Case Studies

August 13, 2000 - August 26, 2000

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Introductory Note

This report marks the second of three visits to be made by Dr. Larson in PAGE's support to the program of environmental economic case studies. The purpose of the visit was to review draft concept and methodology statements by Team Leaders, and to make suggestions for their modification. Dr. Larson is scheduled to return a third and final time under the program in early 2001 when all the case studies have been completed. At that time, he will participate in the final analysis and lessons learned from the process.

Trip Report, August 13 - 26

August 13: Departed Boston about 6 p.m.

August 14: Arrived Antananarivo about 11 p.m.

August 15: Arrived Hotel Ibis about 12:30 a.m. Given that it was a holiday in Madagascar, I spent the day reviewing documents for the case studies and preparing some additional materials to deliver to Josiane the following day.

August 16, Morning: Picked up at the Hotel about 8 and spent the rest of the morning at the PAGE office with Josiane (providing documents, discussing project case study topics, etc.).

August 16, Afternoon: Spent the afternoon in a meeting at the PAGE office with members of the Technical Committee (Hugues, Francis, Bart) and Josiane discussing the projects.

August 17, Day: Spent most of the day with Hugues and the leaders of the 3 proposed case studies (and the additional potential study about electricity). Each case study leader with the assistance of Hugues presented their ideas. After the initial presentations, we discussed in more detail what they could actually do and how they could go about it.

For the "on-site costs of soil erosion" study (Leader is Lalaina), the site was not yet clear because Hugues was waiting for the DG of ANAE to return to assist with the selection. Hugue also was under the impression that ANAE already had collected data on various sites that would allow the team to estimate benefits of having adopted various soil erosion measures. We agreed to meet the following Monday afternoon, after they spoke to the ANAE DG to follow up in more detail on what to do with the data.

Next we discussed the "air pollution and health" case study (Leader Nirina). The air pollution topic can be looked at from various angles (urban/rural, ambient/indoor). From valuation studies, it is most common to value health events (a sick day, etc.) and then use information on ambient air quality and exposure response coefficients to predict health events (i.e. the changes in the number of sick days per year in the city of Antananarivo because ambient air quality is on average 100% above regulatory standards, etc.). For the case study, the valuation effort needs to focus on values of health events and not attempt to try to create new exposure response coefficients. For the topic of urban air and health, I provided a new (unpublished paper) to Nirina (and Josiane has a copy of this "Jarkarta" study) that provides an excellent example of how to proceed with valuing health events. We discussed survey design, data, and statistical issues and agreed to follow up on these topics the following Monday afternoon.

We then discussed the "biodiversity" case study (Leader Fano). After discussing the topic, it was clear that the topic was not clear. Fano agreed to follow up with the biodiversity people at ONE to see what they think and would find interesting. We also agreed to meet the following Monday afternoon.

Hugue and Iolo then discussed their other interest in a case study on using a CV approach to estimate the demand for improved electricity service in a specific region in the country. Supposedly someone in the energy ministry is interested in such information as part of their strategy for electricity service expansion and tariff setting. While the topic is clear and would probably provide a clear example of completing a CV study related to improved public

services, it was not clear to me if this study was to be included in the project or not. I told Hugues to talk to Philip.

August 18: I spent most of the morning and early afternoon with Bart and two of his teams. We spent most of the morning with Ramy and Daniela discussing the water project in Fianarantsoa. While there are many issues that one could consider, (deforestation and water availability, low or no prices affecting water use and conservation and investment, the current national company providing service to a city), the main valuation case study should focus on local residents values of either improved water service (or values of avoiding declines in existing service). It is probably easiest at this stage to focus on values of improved services. We then discussed estimation methods, survey design, and sampling strategies. The topic of 'scenario' remains outstanding. The team will probably need to talk with the water company, the city government, and perhaps a focus group of residents in the city to see what service changes are possible and are of interest and realistic to people in the city.

We then discussed the topic of "off-site costs of soil erosion" (Leader Joceline). This topic will focus on off-site costs in terms of irrigation infrastructure degradation and rice production. After discussing various possibilities, we discussed how a cross-sectional data set for rice producers along with specific information on the quality of their irrigation infrastructure could be used to estimate the impacts of infrastructure quality on agricultural productivity. This link between infrastructure and productivity is the impact that one is able to estimate from real world data. To make the link to soil erosion, it is then necessary to discuss how erosion in a region is likely to affect infrastructure. The erosion-infrastructure link can be discussed in the case study, but the main valuation efforts need to focus on the productivity/infrastructure link.

August 19: I spent the morning reviewing documents and the case study topics to prepare for the meeting with Hugues teams on Monday afternoon. I took the afternoon off.

August 20: Off.
August 21: I spent the morning at CFSIGE with Franck, Angelin, and Julio discussing the case study related to SOMAQUA. After discussing the general context of the situation, we discussed how to pursue the topic. It seems most reasonable to focus the study on a fairly detailed calculation of the shrimp aquaculture operation with following the EIE recommendations compared to what would likely have been the case without the recommendations. This analysis will include the wood-fuel projects included in the EIE to take account of current and future demand for wood fuels in the region. If alternative sources of wood fuels are not available, it is likely that destruction of mangroves will increase with future productivity impacts on the aquaculture operation. Julio and I agreed to meet again later in the week to follow up on additional questions regarding such analysis.

Before leaving CFSIGE, I also met with Franck and the DG to discuss potential collaboration with GIS groups at the University of Connecticut.

I spent the afternoon following up with the case study leaders for the projects under the supervision of Hugues. Regarding the on-site costs of soil degradation, Lalaina mentioned that they had learned little from the DG regarding ANGAP projects and soil conservation activities. With a similar underlying logic as the off-site costs of erosion study, we discussed how one could organize a data set on agricultural productivity at the household level (and by plot) that includes information on the use of various conservation measures (that need to be defined). With such information, it is possible to consider who adopts soil conservation measures and how such measures affect agricultural productivity (e.g. rice per unit of land area, profits, etc.). This information can then be used to discuss the farm-level benefits of soil conservation and/or the farm level costs of soil degradation. It would make sense to have the two-case study leaders for on-site and off-site costs to share information and help each other out during the course of the projects (and to be able to seek assistance from Hugues and Bart).

Regarding the air pollution and health project (Nirina), I would recommend that they follow closely the approach used in the Jakarta study that I left with Josiane.

Regarding the biodiversity (Fano), it makes sense to estimate the existing market value for a set of already collected products on the market (e.g., perhaps 5-6 types of plants, insects, and/or animals). Fano mention that an ONE biodiversity person can provide such information. After a market value study is completed (perhaps at the local, regional, and export level), Fano could use these numbers to put into some simple calculations of bioprospecting value, where it could make sense to look at higher probability but lower-payoff events using the methodology in Simpson, Sedjo and Reid.

August 22: I spent the morning with Francis and Tiana discussing the Park valuation study. With a focus on Andisibe Park, this CV study can estimate two different types of values. First, the study can focus on tourists (local and foreign) WTP additional for entrance to the park. This information provide an estimate of the additional value already provided to visitors that is not collected in existing entrance fees. Second, the study can inquire about visitors interest in a few types of service and infrastructure upgrades, which can then also be valued. It is alsopossible in this study to question tourist entering and leaving the park to see how information effects the responses. Tiana also mentioned an interest in surveying tourists leaving at Ivato, but it is not clear to me what the focus of such a survey would be.

I returned to the PAGE office mid-day to discuss a few details with Josiane, and then returned to the hotel to begin drafting this trip report. Later in the afternoon, I met Francis and Haja to discuss further the non-timber forest products study.

Later in the afternoon I met with Zaza and Bart to discuss the value of water improvement projects in an ANGAP village. After discussing the topic, we realized that trying to do something related to willingness pay in this context probably does not make sense. It could be the case that villages near a Park feel they now have a right to such projects from ANGAP as a subsidy from Park

revenues. Thus, it's probably not a good idea to ask they what they are willing to pay if they feel they have a right not to pay. Also, to provide useful information to ANGAP, it seems most useful to try to estimate the impacts (benefits) at the village level of some water improvement project that already exists in a village (or villages).

As a result, we discussed the following logic. First, collect information from households on their existing water activities (e.g. opinions of quality, service), time spent collecting, quantities perhaps. Second, collect information on if and how these activities are now different than they were before the project. In many respects, this survey process will help them to think about the benefits to their household of having the project. The third stage involves the CV analysis, where the scenario focuses on the willingness to accept some amount (of rice for example) to be as well off without the water project as with the project. Since they have the right to the project, a WTA format makes sense here.

August 23: I met with Timon and Francis to discuss the energy and woodfuels topic. We discussed two possibilities. First, we discussed the possibility of conducting a direct financial analysis of the woodfuels market based on wood originating from plantations and natural forests. The results of this type of analysis would provide information on the cost disadvantage that existing plantations have relative to producers using natural forests. In effect, there is a subsidy to urban consumers from having access to lower cost fuels.

Second, we discussed the possibility of investigating the costs of deforestation to villages based on increased costs of fuel wood collection. The logic of this analysis would be essentially a travel-cost logic, where travel costs in this case is some complex combination of distance, collection time of family members, and quality of the site accessed for fuel. It is possible to use variation across villages (and probably across household's in the same village) to estimate the impacts of deforestation through higher fuel costs. Both topics are potentially interesting, and Francis and Timon were going to consider further which topic would be most relevant to pursue at this time.

I then returned to the PAGE office and met briefly with Frank Hawkins and the Dobbins team. I explained the valuation projects, the capacity building emphasis, and provided some additional information to their economist.

After saying hello to Philip after lunch, I met with Josiane to discuss the carbon sequestration study. We created a few example spreadsheets to calculate carbon sequestered, and costs per ton of carbon sequestered, for reforestation and forest protection activities. It seems that this study should focus simply on providing a clear understanding ofthe logic of how to estimate tons of carbon saved through reforestation projects and natural forest management (projects to stop deforestation). It should be possible to replicate the Kremen et al. article in Science (just the benefits of carbon to the country) and then apply similar logic to other sites in the country.

I returned to hotel later in the afternoon to continue drafting this trip report.

August 24: The complete set of case study leaders, technical committee and others from PAGE met at the PAGE office. In this meeting, the case study leaders presented their case study topic and logic in more detail and explained methodological details. This meeting provided a good chance for the different study leaders to see what the others are doing and to see some of the natural links across the studies. As a result, several of the case study leaders should be in regular contact (e.g., the on- and off-site costs of soil erosion studies, the biodiversity and non-timber forest products study).

I met with Josiane after lunch to continue working through the Kremen analysis. Given that some of the logic of the analysis in the Kremen article is not all that obvious from what is reported in the paper (and the Science website), Josiane needs to follow up directly with Kremen to receive more detailed information on what she actually did.

I then returned to the hotel late in the afternoon to continue drafting this report.

August 25:

I spoke briefly in the morning with Francis regarding the tourism study. We discussed how to survey tourists at the airport (Ivato) to get information for their tourism study.

After checking out of the hotel at 10am, I had a series of meeting with various case study leaders.

Julio and I discussed further details of the EIE Somaqua study. We also discussed sensitivity analysis, and I showed him how it might be possible to complete a simple Monte Carlo simulation as part of the report. I need to send an excel file to Josiane for Julio when I return to the US.

Bart and I then discussed some additional details regarding the on-site costs of soil degradation study. Zaza then joined us and we reviewed a draft survey instrument for his study. Getting information on household water service before and after the project seems very important to understand the types of impacts that household's observed because of the project.

Nirina, Fano and I then discussed some additional details of their studies. With the health study, it would be nice to identify two or three health events for adults and two or three for children in the household. Having children and adult health events, both valued by the adults in household, is important for the indoor air study because children and women are the main household members effected by indoor air pollution. The household survey with also collect information on house design and cooking technology to be able to make a statistical link between actual health events in the past and information on the household. As Francis suggested earlier in the morning, it might be nice to develop one study instrument that can be used in the same locations for the fuelwood and indoor air study.

There was a final debriefing with the PAGE team in the middle of the afternoon.

I went to the airport about 10 pm.

August 26. Returned to the US.

Final Comments on Report Structure

While the final structure of the various case study reports may need to vary based on what seems to make the most sense as the analysis is completed and the results are interpreted, as a starting point I would recommend the following structure to each report:

Introduction

> Set the stage with the general issue, why it is important, what values we need to know but do not, clearly state the purpose of this valuation study (provides some better information on values that are needed but not known)

Methodological Background

> Provided a detailed description of the economic valuation problem addressed in this study and the methods to be used to complete the analysis. This section will be an important resource for people in the future to use to understand and replicate the analysis.

Survey and Data Development

> Explain the survey process in detail, explain the valuation logic in the survey and briefly summarize the data (e.g. a summary statistics table to two on key variables).

Empirical Model

> Explain what is done and how (e.g. a logit model was estimated with the following variables).

Results and Discussion

Conclusion

References

Appendices

Complete Survey
Data set on disk with complete data variable description
Copies of any programs and files used to conduct the analysis (e.g. stata programs, excel files used to conduct present value calculations). It will be very important to document how the analysis was completed so that results can be verified and replicated in the future.